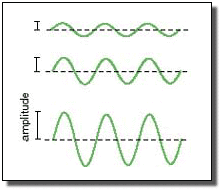
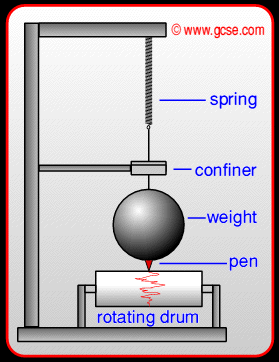
Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per: \_\_\_\_\_

NOTES: Characteristics of Waves- Ch. \_\_\_\_\_, Sec. \_\_\_\_, pp \_\_\_\_ - \_\_\_\_

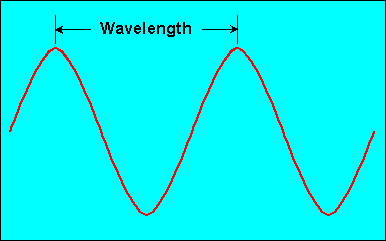


**A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* The maximum movement of a wave from \_\_\_\_\_\_\_\_\_\_\_.
* Measured from rest to \_\_\_\_\_\_\_\_\_\_ (top of the wave) or rest to \_\_\_\_\_\_\_\_\_\_\_\_ (bottom).
* Represents the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ carried by the wave
* Ex: A sound wave with more energy and greater amplitude is \_\_\_\_\_\_\_\_\_\_\_\_\_
* The intensity of an earthquake is determined by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the original disturbance and waves.
* Earthquake energy measured by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

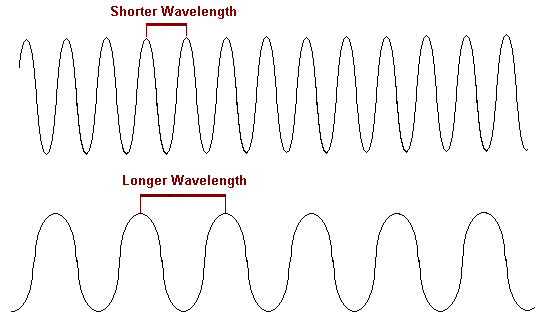
**How does it work**?

**B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* The distance between two equivalent parts of a wave.

Ex: from \_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_

* Symbol = \_\_\_\_\_\_ (Greek letter \_\_\_\_\_\_\_\_\_\_\_\_)
* unit = \_\_\_\_\_\_\_\_\_\_\_\_

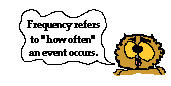


* shorter wavelengths carry \_\_\_\_\_\_\_\_\_\_\_ energy than longer wavelengths.

**C. \_\_\_\_\_\_\_\_\_\_\_\_\_**

* the time (seconds) required for one full \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a wave to pass a certain point.

Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

D. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

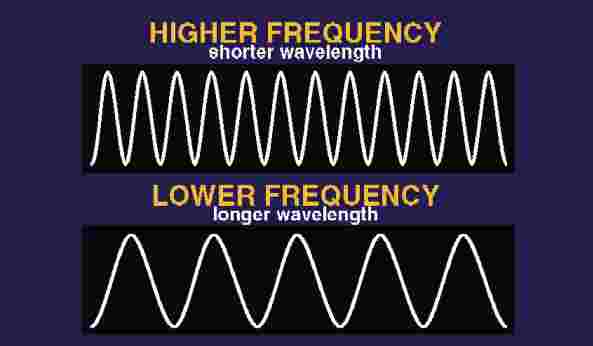
* The number of complete waves per unit of time (waves/second)
* Unit = \_\_\_\_\_\_\_\_\_\_\_\_. 1 \_\_\_\_\_\_\_\_\_\_ = 1 vibration / sec
* Distinguishes one color of \_\_\_\_\_\_\_\_\_\_\_\_ from another, or whether or not a \_\_\_\_\_\_\_\_\_\_\_\_ is audible.

LIGHT: In the same medium, light travels at the \_\_\_\_\_\_\_\_\_ speed (300,000,000 m/s or

186,000 mph). What makes the colors different? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SOUND: In the same medium, sound travels at the \_\_\_\_\_\_\_\_\_ speed. What makes

differently pitched (high/low) sounds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Humans hear sounds that range from \_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ Hz. (Mosquito ringtones!)
* For two waves moving at the SAME speed, as λ INCREASES, frequency \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* In addition, as the period of a wave decreases, the frequency \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (INVERSE relationship)

**Wave Speed**

* The speed of a wave depends on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* In a given medium, the speed of a wave is \_\_\_\_\_\_\_\_\_\_\_\_\_\_....but if the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes.
* The speed of a wave is equal to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ divided by \_\_\_\_\_\_\_\_\_,

*or* to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ multiplied by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**wave speed =**

***or***

**wave speed =**

**Practice Problem:**

The string of a piano that produces the note middle C vibrates with a frequency of \_­­­­\_\_\_\_\_ Hz. If the sound waves produced by this string have a wavelength in air of \_\_\_\_\_\_ m, what is the *speed* of the sound waves?

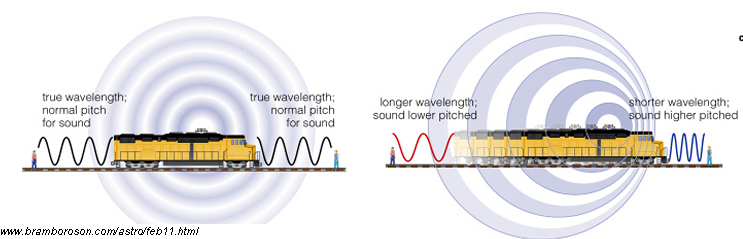
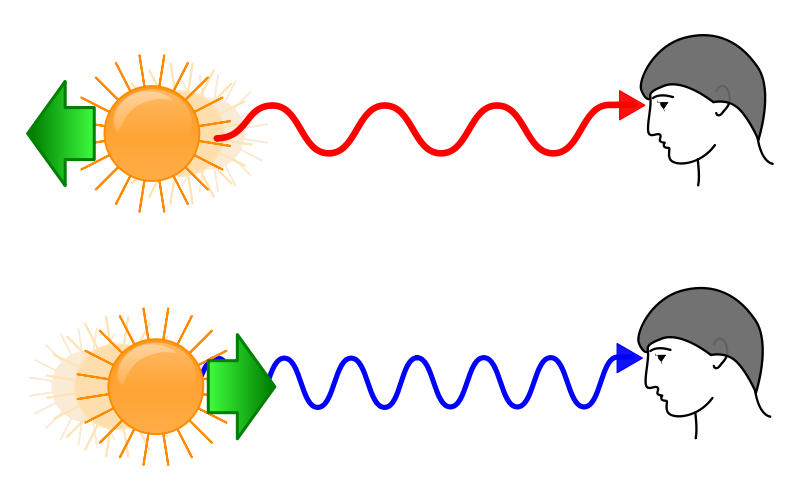
Variables:

Equation & Plug-in:

Solution, Units, and Circle:

**The Doppler Effect**

* An observed change in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a wave when the source of the wave or the observer is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Video: Fire engine & train: How does the sound change? **WHY? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* In terms of **astronomy**, how does “REDSHIFT” and “BLUESHIFT” relate to the Doppler effect?

**Wave Speed Practice Problems:**

|  |  |
| --- | --- |
| 1. The average wavelength in a series of ocean waves is \_\_\_\_\_ m. A wave crest arrives at the shore on average every \_\_\_\_\_\_ s, so the frequency is \_\_\_\_\_\_ Hz. What is the average *speed* of the wave? | Variables:  Equation & Plug-in:  Solution, Units, and Circle: |
| 2. Green light has a wavelength of \_\_\_\_\_\_\_ m. The speed of light is \_\_\_\_\_\_\_\_\_ m/s. Calculate the *frequency* of green light waves with this wavelength. | Variables:  Equation & Plug-in:  Solution, Units, and Circle: |
| 3. The speed of sound in air is about \_\_\_\_\_\_ m/s. What is the *wavelength* of a sound wave with a frequency of \_\_\_\_\_\_ Hz (on a piano, the A below middle C)? | Variables:  Equation & Plug-in:  Solution, Units, and Circle: |
| 4. Calculate the frequency of microwaves that have a wavelength of \_\_\_\_\_\_\_\_ m and a speed of \_\_\_\_\_\_\_\_\_m/s. | Variables:  Equation & Plug-in:  Solution, Units, and Circle: |